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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,206	03/31/2004	Angel Stoyanov	25384	9520

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EXAMINER
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CORDRAY, DENNIS R

ART UNIT	PAPER NUMBER
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1731

DATE MAILED: 07/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/815,206

Applicant(s)

STOYANOV ET AL.

Examiner

Dennis Cordray

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 and 12-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Declaration***

The Declaration of Kathy A. Welch pursuant to 37 C.F.R. 1.131 is acknowledged.

### ***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

1. Claims 1-4, 6-10, and 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hansen et al (6340411) in view of Cook et al (5562740) and further in view of Arifoglu et al (5103522).

Hansen et al discloses a crosslinked cellulosic product comprising cellulose fibers, one or more binders such as  $\alpha$ -hydroxy polycarboxylic acid (citric or tartaric acid are preferred examples) and polyols (col 4, lines 32-45 and 56), and/or a densifying agent that can be a polyol (sorbitol is a preferred example) (col 59, lines 1-31). The disclosure teaches that both  $\alpha$ -hydroxy polycarboxylic acids and polyols can cause intrafiber crosslinking (col 34, lines 4-6, 20-28) and can also be used as crosslinking agents provided precautions are taken to prevent all of the material from be used up for crosslinking (col 53, lines 37-64). The polyol can be present in an amount from 1% to 80 % by weight of the fibrous material (col 6, lines 8-10). Examples are given of the fibrous product with a wet bulk of 16.1 and 19.4 cc/g (col 41, lines 49-50). Hansen

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teaches that the crosslinked fibers can be used in absorbent products (col 2, lines 1-3). Absorbent products comprise diapers, sanitary napkins, incontinence pads, towels, etc (col 54, lines 14-16).

Hansen et al does not disclose bleached fibers or that bleached fibers have a Whiteness Index (WI) at least one unit greater than unbleached fibers. Hansen et al also does not disclose fibers having a brightness greater than 80 % ISO.

Bleaching is a well known process in the art for whitening pulps, papers and other substrates and hydrogen peroxide is a preferred bleach (see Farr et al "Bleaching Agents" [online article] Kirk-Othmer Encyclopedia of Chemical Technology John Wiley & Sons 2003).

Cook et al discloses bleaching polycarboxylic acid crosslinked fibers. The bleached fibers have a brightness of 86 after bleaching in an aqueous solution of sodium hydroxide and hydrogen peroxide (col 3, lines 42-45, 51-52). Cook et al teaches that improved brightness has a better aesthetic appeal to customers (col 3, lines 8-12). Cook et al does not disclose bleached fibers that have a WI at least one unit greater than unbleached fibers.

Arifoglu et al gives an example of a wool flannel with a WI of 11.42 unbleached and a WI of 35.85 after bleaching with hydrogen peroxide. Thus, bleaching with hydrogen peroxide can increase the WI of a substrate by more than one point

The art of Hansen et al, Cook et al, Arifoglu et al and the claimed invention are analogous because they are from the same art of treating cellulosic fibers or bleaching fibers to improve whiteness or brightness. It would have been obvious at the time the

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invention was made to a person with ordinary skill in the art to bleach the crosslinked fibers to obtain the claimed brightness in the process of Hansen et al in view of Cook et al to make the crosslinked fibers aesthetically appealing to customers. It would also have been obvious at the time the invention was made to a person with ordinary skill in the art to bleach the fibers using the claimed bleaching agents as a well known process and to make the fibers appealing to customers. It would have been obvious at the time the invention was made to a person with ordinary skill in the art in the process of Hansen et al in view of Cook et al and further in view of Arifoglu et al to obtain the claimed increase in WI to improve the aesthetic appeal of the product using a known process for whitening fibers with a reasonable expectation of success.

2. Claims 1-5 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hansen et al, Cook et al and Arifoglu et al as applied to claim 1 above and further in view of Smith et al (US 2002/0090511).

Hansen et al, Cook et al and Arifoglu et al do not disclose malic acid as a crosslinking agent.

Smith et al discloses that citric, malic and tartaric acids are crosslinking agents for cellulosic fibers p 6, pars 71 and 74; pp 13-14, Tables 3 & 4). Smith et al also teaches that bleached fibers have superior brightness and consumer appeal (p 3, par 35). Although the pulp is bleached in Smith et al, the teaching is that bleaching increases brightness and that increased brightness is appealing to consumers.

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The art of Hansen et al, Cook et al, Arifoglu et al, Smith et al and the claimed invention are analogous because they are from the same art of treating fibers. It would have been obvious at the time the invention was made to a person with ordinary skill in the art to use malic acid as a crosslinking agent in the process of Hansen et al, Cook et al and Arifoglu et al and further in view of Smith et al as a functionally equivalent option.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-8 and 12-13 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 5-8, 10-12 and 16-17 of copending Application No. 10/748930 in view of Cook et al and Arifoglu et al.

- Claim 1 of the copending application recites crosslinked cellulosic fibers comprising cellulosic fibers reacted with an effective amount of crosslinking agent in the presence of an effective amount of C<sub>4</sub>-C<sub>12</sub> polyol and characterized by a

Whiteness Index greater than about 69.0. Claim 1 of the copending application differs from Claim 1 in the instant application in that it 1) does not specify that the crosslinked fibers are bleached; 2) it does not specify that the bleached fibers have a Whiteness Index greater than unbleached fibers; and 3) it claims a brightness of greater than about 69.0. Claim 1 of the copending application does not exclude bleaching and so is generic to Claim 1 of the instant application. Specifically, one embodiment anticipated by the Claim 1 of the copending application would be the bleached crosslinked fibers of Claim 1 of the instant application. Cook et al teaches that bleaching elevates brightness and that a brighter product is more appealing. As detailed in the above rejection, it is also known that bleaching improves whiteness. Arifoglu et al teaches that bleaching with hydrogen peroxide can increase the WI of a substrate by more than one point. It would have been obvious to one of ordinary skill in the art to bleach the crosslinked fibers of Claim 1 of the copending application to make the fibers brighter and whiter. The composition of the reacted fibers is the same in both claims, thus their properties, such as brightness and whiteness increase, would be the same.

- Claims 2-5 of the instant application read the same as Claims 5-8 of the copending application with appropriate change in the referenced claim numbers.
- Claims 6-8 the instant application read the same as Claims 10-12 of the copending application with appropriate change in the referenced claim numbers.

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- Claims 12 and 13 of the instant application read on substantially the same ranges as Claims 16 and 17 of the copending application.

This is a provisional obviousness-type double patenting rejection.

### ***Response to Arguments***

Applicant's arguments, see p 4, filed 5/19/2006, with respect to the rejections of Claims over Hansen et al, Cook et al, Neogi, Smith et al and Ko et al have been fully considered and are persuasive. The Neogi reference has been dropped from consideration and the rejections of Claims 1-16 have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made as detailed above.

Applicant argues on pp 4-5 that Hansen et al teaches that the binders that can also crosslink are polyols, polyaldehydes, polycarboxylic acids and polyamines, but does not reference alpha-hydroxypolycarboxylic acids as crosslinking agents. Hansen discloses that citric acid, an alpha-hydroxypolycarboxylic acid, is a polycarboxylic acid and a known crosslinking substance for cellulosic fibers (col 50, lines 49-50). Alpha-hydroxypolycarboxylic acids, such as citric acid, tartaric acid, malic acid, are well-known in the art as crosslinking agents for cellulosic fibers (see West et al, 5906894, col 3, lines 50-56 and 63-65 or Smith et al, p 6, pars 71 and 74; pp 13-14, Tables 3 & 4). West et al also labels the above acids as polycarboxylic acids. Thus, the label "polycarboxylic acids" is known in the art to encompass alpha-hydroxypolycarboxylic acids.

Applicant argues on p 5 that Hansen et al does not teach the combination of crosslinking agent and a polyol to achieve the object of the instant invention, but that they are used alone or in combination to achieve the binding effect of his invention. Hansen et al teaches that both alpha-hydroxy polycarboxylic acids and polyols can cause intrafiber crosslinking (col 34, lines 4-6, 20-28). The disclosure teaches the use of polycarboxylic acid, polyols and combinations thereof as species for use as a binder (col 4, lines 41-46). Preferred species of polycarboxylic acids include citric acid and tartaric acid, and (col 4, lines 52-59). Hansen et al teaches the use of the combination of polycarboxylic acid and polyol (thus the polycarboxylic acid is in the presence of polyol). Hansen et al teaches that the same composition used as a binder can also be used to crosslink the fibers so long as precautions (the fibers should contain at least 20% water) are taken to prevent all of the binder from being consumed during the curing step. In column 34, lines 20-32, Hansen et al states:

"Hence, in processes that use polycarboxylic acids, polyols and polyamines (which includes both polymeric and nonpolymeric amines having more than one amine group) as binders in the present invention, the fibers should contain at least 20% water (or 20-50% water) by weight if the particles and binder are present in the fibers when curing occurs. The water inhibits covalent bond formation, and prevents all of the binder from being used to form covalent intrafiber crosslinks. Hence, some of the binder remains available to form the non-covalent bonds with the particles and produce ease of densification in fiber products made by the process of the present invention."

In column 53, Example 32, lines 37-53, Hansen et al states:

"The particle binders and particles of the present invention can be added before, after, or simultaneously with curing. The term "curing in the presence of the binder" means that the binder is added before or simultaneously with curing. Curing in the presence of the binder is not usually a problem because the binder cannot always participate in the intrafiber crosslinking reaction, and the binder is not affected by the curing step. In certain situations, however, the binder can also form covalent intrafiber crosslinks. Polycarboxylic acids (such as citric acid), polyols (such as dipropylene glycol) and polyamines (such as ethylene diamine) can function as crosslinking agents, and are consumed during the curing step in the formation of covalent crosslinks. Hence in the limited case in which the crosslinking agent is also a binder material, steps should be taken to prevent the binder from being consumed as a crosslinker in the curing step" [emphasis added].

Both polyols and alpha-hydroxypolycarboxylic acids can be together in the claimed concentrations under crosslinking conditions with the fibers of Hansen et al. The binders disclosed by Hansen et al are capable of functioning together to crosslink the cellulosic fibers because, where the claimed and prior art apparatus or product are identical or substantially identical in structure or composition, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). In other words, when the structure recited in the reference is substantially identical to that of the claims, the claimed properties or functions are presumed to be inherent.

Applicant argues that there is no teaching, suggestion or motivation to combine the disclosures of Hansen et al and Cook et al. The rationale to modify or combine the prior art does not have to be expressly stated in the prior art; the rationale may be expressly or impliedly contained in the prior art or it may be reasoned from knowledge generally available to one of ordinary skill in the art, established scientific principles, or legal precedent established by prior case law. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

Bleaching is a well known process in the art for whitening pulps, papers and other substrates and hydrogen peroxide is a preferred bleach in the art (Farr et al "Bleaching Agents" [online article] Kirk-Othmer Encyclopedia of Chemical Technology John Wiley & Sons 2003). Bleaching to improve the brightness of crosslinked cellulosic fibers is also known (Cook et al, Abstract; col 4, lines 51-54). It is known that crosslinking cellulosic fibers using citric acid can lead to yellowing of the fibers and unpleasant odors (Cook, col 3, lines 27-41). Cook et al teaches that obtaining low odor and higher brightness is desirable for the aesthetics of the fibers. Smith et al also teaches that bleached fibers have superior brightness and consumer appeal (p 3, par 35). Although the pulp is bleached in Smith et al rather than the crosslinked fibers, the teaching is that bleaching increases brightness and that increased brightness is appealing to consumers. The motivation to combine the teachings of Cook et al and Hansen et al to bleach the crosslinked fibers would be obvious to one of ordinary skill in the art from the preceding sentences describing potential problems from crosslinking

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and the general knowledge in the art that bleaching increases brightness and whiteness and improves the aesthetics of a product.

### ***Conclusion***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Cordray whose telephone number is 571-272-8244. The examiner can normally be reached on M - F, 7:30 -4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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